

REMARKS

Status of the Claims

Claims 1, 2, 4, 5, 9, 11 – 18, 21 – 26, 28 - 39 were pending.

Claims 1, 2, 4, 5, 9, 11 – 18, 21 – 26, 28 - 39 were rejected.

Please **amend** claims 1, 9, 11, 17, 25, 32, 39.

Claims 1, 2, 4, 5, 9, 11 – 18, 21-26, 28 – 39, are pending.

It is believed that the remarks laid out herein below attend to all rejections and further issues raised in the pending office action dated 13 May 2008.

Claim Rejections

Claim Rejections Under 35USC102

Claims 1, 2, 4, 5, 9, 11 – 18, 21-26, 28 – 39 were rejected under 35USC102(b) as allegedly being anticipated by Toh (5,987,110).

Amended claim 1 includes the following features:

each gateway originating and broadcasting beacons from a plurality of radios over a plurality of channels, each channel different from other of the plurality of channels, each radio broadcasting the beacons over a corresponding one of the plurality of channels, the beacons being broadcast over each of the plurality of channels at a predetermined rate;

the access node simultaneously receiving over a plurality of channels wherein an access node radio corresponds with each of the plurality of channels, beacons from at least one upstream access node or gateway, the beacons

providing information of selected upstream paths between each of the upstream access nodes and the plurality of gateways; and

the access node selecting a routing path between the access node and at least one of the plurality of gateways, based on a persistence of successfully received beacons, the selected routing path including multiple different channels;

the access node re-broadcasting beacons corresponding to the selected routing path, over each of the plurality of channels, the rebroadcast beacons having been modified by the access node to include information of the selected routing path.

In contrast, Toh teaches a method of supporting ad-hoc mobile communications within a radio communications network. The network comprises a plurality of mobile hosts including a source mobile host and a destination mobile host, and a plurality of radio communication links (as opposed to radio communication channels) connecting together with mobile hosts. The method includes measuring the stability of the communications links between neighboring mobile hosts using an associativity based characteristic and selecting a communications route through the network. Each mobile host periodically transmits and receives identifier beacons (ticks) (as opposed to receiving, selecting, modifying and retransmitting) and updates the status of its corresponding links. The greater number of ticks associated with a given link, the greater its stability.

Toh does not teach or suggest a gateway simultaneous broadcasting beacons over multiple radios, over multiple channels. Additionally, Toh does not teach an access node simultaneously receiving beacons through multiple radios over multiple channels. Additionally, Toh does not teach an access node modifying the beacons and re-broadcasting the modified beacons with multiple radios over multiple channels.

Additionally, Toh does not teach the modified beacons including routing selection information.

As described below, the cited reference does not teach many of the claimed elements as described below. A 35USC102 rejection requires the cited reference to teach all of the claimed elements – which the cited reference does not do. Additionally, the claimed invention is not obvious in light of the cited reference.

Section 2143.03 of the MPEP requires the “consideration” of every claim feature in an obvious determination. To render claim 1 unpatentable, however, the Office must do more than merely “consider” each and every feature for this claim. Instead, the asserted combination (or single reference) must also teach or suggest each and every claim feature.

Applicant disagrees with the Examiner’s rejections for the following reasons:

1. Toh shows and describes routers connected to other routers through multiple links, not multiple channels.

Applicants cannot identify any teachings within Toh that suggest routers (gateways and/or access nodes) being wirelessly connected through multiple channels. The Examiner seems to be suggesting that column 8, lines 31 – 47 of Toh teaches multiple links. However, Toh is merely describing mobile applications being intelligent enough to decide a communication mode (for example, ad-hoc or BS-oriented) that best suits service requirements.

However, mode selection does not teach or suggest routers being wirelessly connected through multiple channels.

A link is a connection (wired or wireless) between two devices. Different channels allow for simultaneous communication with minimal

interference between channels. For example, different channels can be defined by different transmit frequencies, or as described in applicant's specification, different standards, such as, 802.11(g) and 802.11(g).

2. Toh does not teach or suggest a gateway having a plurality of radios.

The claimed invention includes at least one gateway originating and simultaneously broadcasting beacons from a plurality of radios over a plurality of channels, each channel different from other of the plurality of channels, at least one radio broadcasting the beacons over a corresponding one of the plurality of channels, the beacons being broadcast over each of the plurality of channels at a predetermined rate;

As previously described, Toh does not teach multiple channels.

Additionally, Toh does not teach or suggest multiple radios of a gateway broadcasting beacons over multiple channels.

The beacons of Toh are used by a mobile device to determine a best link while the mobile device is moving. The links include common (same) channels, and therefore, there would be no reason for Toh to include multiple radios.

3. Toh does not teach or suggest a gateway simultaneously broadcasting beacons over multiple channels by multiple radios.

As described, Toh does not teach or suggest multiple channels, or multiple radios within the gateway. Additionally, Toh does not teach or suggests simultaneous broadcasting of beacons through multiple channels by multiple radios of the gateway.

4. Toh does not teach an access node receiving beacons over a plurality of channels.

The claimed invention includes the access node simultaneously receiving over a plurality of channels wherein an access node radio corresponds with each of the plurality of channels, beacons from at least one upstream access node or gateway, the beacons providing information of selected upstream paths between each of the upstream access nodes and the plurality of gateways.

5. Toh does not teach or suggest an access node having multiple radios.

The Examiner seems to be suggesting that column 8, lines 31 – 47 of Toh teaches multiple links. However, Toh is merely describing mobile applications being intelligent enough to decide a communication mode (for example, ad-hoc or BS-oriented) that best suits service requirements. However, mode selection does not teach or suggest routers being wirelessly connected through multiple channels.

6. Toh does not teach or suggest the access node simultaneously receiving beacons over multiple channels with multiple radios.

Simultaneous reception of beacons over multiple channels allows the access node to select routing paths having links that include multiple different channels.

7. Toh does not teach an access node selecting a routing path that includes multiple channels.

Toh does not teach multiple channels. Even if Toh did teach multiple channels, Toh does not teach a routing path to a gateway in which the routing path includes multiple different channels. Additionally, there is no way to construe Toh to teach multiple channels being simultaneously

in operation as would occur in order for the access node to select a routing path that includes multiple channels

8. Toh does not teach an access node that receives beacons, modifies them, and then re-broadcasts the modified beacons.

The beacons of Toh are used to determine a best quality link between a mobile node and an upstream device. The beacons are originated at each of the mobile devices. Toh does not in any way suggest that beacons are received, modified and then rebroadcast.

9. Toh does not teach an access node re-broadcasting modified beacons over a plurality of channels with a plurality of radios.

Toh does not teach an access node including a plurality of radios. Further, Toh does not teach modified beacons being re-broadcast over a plurality of channels by the plurality of radios.

10. Toh does not teach including routing selection information with re-broadcast beacons.

As described, the beacons of Toh are used to determine the quality of individual links. The link quality is determined by the number of received ticks (beacons). There is no teaching or suggesting by Toh to include routing selections information within the beacons.

Claims 1, 17, 25, 32 are patentable over Toh.

Claims 2, 4, 5, 9, 11 – 16, 29 are directly or indirectly dependent on claim 1. Therefore, claims 2, 4, 5, 9, 11 – 16, 29 are patentable as well.

Claims 9, 11 are additionally patentable over Toh because these claims include additional features that are based at least partially on the multiple different channel of routing paths – clearly not taught by Toh.

Claim 15 is additionally patentable over Toh because Toh does not teach modifying beacons with routing information or transmitting beacons over multiple channels.

Claim 16 is additionally patentable over Toh because Toh does not teach sending a reverse beacon, or constructing a client tree in the gateway wherein at least one path of the client tree includes multiple channels to the client.

Amended claim 39 provides additional features regarding the re-broadcasting of beacons by the access node. More specifically, claim 39 includes the

the access node adjusting a link quality and path quality associated with the received beacons based on whether beacons are received within a routing cycle;

the access node retransmitting modified beacons over each of the plurality of channels if the path quality is above a threshold.

None of the references teach or suggest retransmitting modified beacons. The modified beacons allow downstream devices to determine a route path to an upstream gateway. Toh teaches beacons being used to determine a quality of a wireless link the beacons are being transmitted over. Toh does not teach or describe nodes modifying beacons, and therefore, downstream devices can merely determine a link quality between the downstream devices and another device directly upstream. Downstream devices cannot determine a routing path that includes multiple channels.

Claims 18, 21 – 24 are directly or indirectly dependent on claim 17. Therefore, claims 18, 21 – 24 are patentable as well.

Claims 26, 28 - 31 are directly or indirectly dependent on claim 25. Therefore, claims 26, 28 - 31 are patentable as well.

Claims 33 - 38 are directly or indirectly dependent on claim 32. Therefore, claims 33 - 38 are patentable as well.

CONCLUSION

For the reasons given above, and after careful review of the cited reference, applicant respectfully submits that none of the cited references result in, teach or suggest applicant's claimed invention.

In view of the above Remarks, applicant has addressed all issues raised in the Office Action dated 13 May 2008, and respectfully solicits a Notice of Allowance for claims 1, 2, 4, 5, 9, 11 – 18, 21-26, 28 – 39. Should any issues remain, the Examiner is encouraged to telephone the undersigned attorney.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

Respectfully submitted,

By: Brian Short

Brian Short, Reg. No. 41,309

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Ph. No. : 408-888-9830